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**Statement of**

**Michael D. Griffin**

**Administrator**

**National Aeronautics and Space Administration**

**before the**

**Committee on Science**

**House of Representatives**

Mr. Chairman and Members of the Committee, thank you for this opportunity to appear today to update the Committee on NASA's plans for the future and our progress in implementing the Vision for Space Exploration. Since testifying before the Committee in June of this year, NASA has made substantial progress in defining a safe and sustainable approach to a program of renewed space exploration beyond low Earth orbit, while maintaining a balanced program for Exploration Systems, Space Operations, Science, and Aeronautics Research. This necessitates that we carefully weigh all the changes and adjustments we are making in our transition work to assure that the exploration program results in a safer and more reliable access to space while we continue to perform NASA's mission safely with the Shuttle.

- We have defined the architecture for space exploration, and outlined our plans for development of the Crew Exploration Vehicle and associated launch and support systems.

- We have adopted a "go-as-you-can-pay" approach toward space exploration, and have set clear priorities and made difficult choices to remain within the budget for exploration.

- We better understand the problem of foam insulation being released from the Space Shuttle external tank. This problem was identified by the cameras that we added to refine our understanding of this issue that, despite our best engineering judgment, surprised us during the launch of Discovery (STS-114) in July. Following the recommendations of the "tiger team" charged with addressing the newest instance of foam loss, we have defined the improvements necessary to fly again and will replace and modify areas of insulation on the external tank from which foam was shed. The design of our future transportation systems eliminates this problem by placing payloads on top of the propellant tanks, rather than on the side as with the Shuttle orbiter.

- We have completed the Shuttle/Station Configuration Options Team (SSCOT) study to evaluate options for the assembly and utilization of the International Space Station (ISS), taking into account the President's decision to retire the Space Shuttle by 2010, while still honoring US commitments to the Space Station International Partners. Based in part on this assessment, we have developed a plan to move forward and begun discussions with our international partners.

- We established a new balance among planetary science, Earth science, solar physics, and astronomy within the overall science program.

- We are reshaping our Aeronautics research program to focus on core competencies, activities appropriate to NASA's unique capabilities, and activities that directly address the needs of the Next Generation Air Transportation System in partnership with other agencies.

As requested in your invitation to testify, the remainder of my statement will elaborate further on NASA's progress in each of the areas mentioned above. In addition, I would like to update the Committee on our progress in two other areas critical to NASA's success -- retaining a robust science portfolio and ensuring a balanced workforce skill mix and productive NASA Centers to complete the Agency's work over many years.

**NASA Plans for Exploration**

As communicated to the Committee by letter dated September 19, 2005, NASA has completed the Exploration Systems Architecture Study (ESAS), which outlines NASA's approach to implementing the Vision for Space Exploration. The Vision calls for the Agency to return the Space Shuttle to flight, complete the International Space Station (ISS), and move on to the exploration of the Moon, Mars and beyond. Based on the ESAS recommendations, NASA has now laid out a detailed plan to support sustained human and robotic lunar exploration operations, accelerate the development of the Crew Exploration Vehicle (CEV) and launch systems for missions to the ISS, Moon, and Mars, and identify key technologies required to enable this exploration architecture.

This plan offers a safe and sustainable approach to space exploration. An important aspect of this plan is that it is a "go-as-you-can-pay" approach, within planned budgets for Exploration Systems, through redirection of funding for longer-term and lower-priority research and technology (R&T) elements within the Exploration Systems Mission Directorate (ESMD). The resulting exploration program implements the ESAS recommendations.

NASA's goal is to deploy the next human spaceflight system, the Crew Exploration Vehicle (CEV) not later than 2012. The first flights will be to the ISS, but the primary goal of the CEV is to support subsequent exploration efforts, including human return to the Moon for week-long stays as early as 2018, but not later than 2020. Longer-duration human presence on the Moon is targeted for 2022. This is accomplished by redirecting existing funding for longer-term and lower-priority R&T elements within the ESMD, while focusing on those R&T activities that support the acceleration of the CEV, launch systems, and high-priority, long-lead items.

As we move forward, NASA will continue working closely with our International Partners to determine how they may best contribute to the Vision for Space Exploration. NASA will develop the transportation infrastructure needed to carry crews and cargo to and from the lunar surface. We hope to work with other space agencies to extend this core capability and expand the range of activities we carry out on the lunar surface. We also hope to cooperate with them on robotic precursor missions and planning for eventual human missions to Mars.

NASA also needs a strong partnership with industry. We will release a draft CEV Call for Improvements (CFI) in the December/January timeframe, and we are pursuing innovative programs to encourage entrepreneurs. Later this month NASA will issue a draft solicitation

requesting commercial service demonstrations for ISS crew and cargo delivery and return. Where commercial providers have demonstrated the ability to meet NASA needs and safety requirements, commercial services will be purchased instead of using government assets and operations.

However, NASA needs more than vibrant international and commercial partnerships; we need a strong, dedicated workforce that can clearly articulate what needs to be done and then they make sure it gets done right. We need healthy NASA centers that fully utilize their unique strengths, and work together to turn the Vision for Space Exploration into reality. As we gear up to accelerate CEV and CLV, all NASA Centers have been assigned enhanced roles and responsibilities to accomplish our exploration goals.

**Setting Priorities within Exploration Systems**

On September 30, 2005, NASA provided a detailed FY 2005 Operating Plan update to all of the Committees in Congress which oversee NASA. Within this Operating Plan update, we outlined how the Agency would accelerate development of the CEV and the Crew Launch Vehicle (CLV) while remaining within planned budget guidance for Exploration Systems.

In the FY 2006 Budget Amendment, $292 million was identified as moving from R&T activities into the Constellation Systems program for CEV and CLV acceleration. Following the results of the ESAS, an additional $493 million is identified to be redirected from R&T activities to CEV and CLV. This yields a total shift from R&T to Constellation in FY 2006 of $785 million, relative to original plans for FY 2006.

CEV and CLV development requirements directly drive the content of ESMD's R&T components. This includes Exploration Systems Research and Technology (ESR&T), Human System Research and Technology (HSR&T), and Prometheus. Focus is shifted from advancing technologies for long-term requirements to directed research and maturing technologies for near-term use. As a result of these R&T requirements, ESMD is undertaking transitional activities within the ESR&T and HSR&T programs to suspend expenditures on specific R&T tasks that will not be continued in FY 2006. FY 2006 funding made available as a result of this transition will be redirected to the Constellation Systems program to enable timely development of the CEV and CLV. Realignment of ESR&T tasks is necessary also to address the technology development priorities for lunar exploration. New technology development activities will be initiated beginning in FY 2006 and will be performed by NASA Centers. Major new work in ESR&T beginning in FY2006 includes development of variable thrust rocket engines that use methane and liquid oxygen propellants, thermal protection system materials, and an auxiliary power system for the CLV. Realignment of HSR&T tasks will shift focus on primary crew health and performance for exploration missions, while reducing tasks in Life Support and Habitation, Human Health and Performance, and Human Systems Integration. Additional detail is below.

- Human Systems Research and Technology (HSR&T):
  NASA is focusing HSR&T funding on program elements that mature technologies needed to support lunar sortie missions and ISS access, while reducing program elements targeting longer-term or lower priority needs. As NASA concentrates the use of the Shuttle on ISS assembly, some ISS utilization will be deferred. As a result, transitional action is being taken now to reduce and/or discontinue approximately 34 contracts and activities previously planned at $344 million in FY 2006. After termination costs and buyouts, these actions will yield $243 million in FY06 that will be applied toward accelerating the CEV and CLV.

- Exploration Systems Research and Technology (ESR&T):
  NASA is realigning projects to support the ESAS recommended architecture requirements. This realignment has resulted in a focused and phased requirements driven R&T program in which some projects are curtailed, some are adjusted, and some are added. Ongoing projects are streamlined to deliver Technology Readiness Level 6 capabilities when needed (system preliminary design review) so as to enable the CEV, launch systems, and lunar lander development schedules. Examples of technology projects focused on the near-term include ablative thermal protection and liquid oxygen-methane propulsion for CEV. Additional work will be phased in after the first few years for lunar lander propulsion systems and nontoxic power and reaction control for launch vehicles. Funding for technologies applicable to lunar surface systems, such as in situ resource utilization (ISRU), are deferred and phased in only during the out years. Discontinued, descoped or delayed technology projects include nanomaterials, inflatable structures, large-scale solar power, intelligent robotic systems, in space assembly, Mars mission specific technologies, and electric propulsion. Transitional action is being taken now to discontinue plans for 80 tasks and activities, previously planned at $206 million in FY 2006, which do not directly support ESAS architecture or schedule requirements. These actions will yield $174 million in FY 2006 that will be applied towards accelerated development of CEV and CLV.

- Prometheus Nuclear Systems and Technology (PNS&T):
  Prior to the completion of the ESAS study, NASA was planning to restructure the Prometheus Nuclear Systems and Technology (PNS&T) program to prioritize NASA's nuclear technology development efforts to provide power on the surface of the Moon for a lunar outpost. ESAS results indicate that, given resource constraints, surface nuclear power systems to support potential long-duration stays on the Moon will not be required until after 2018. Nuclear propulsion will not be required until planning for Mars missions begins in earnest. The result of the findings is a total reformulation in the nuclear program, deferring all work until it is needed, yielding $76 million in FY 2006 to accelerate development of CEV and CLV. Funding at these lower levels also assumed that remaining JIMO project activity was concluded at the Phase A Project Mission Systems Review milestone and that support for Prometheus by the DOE's Office of Naval Reactors will not continue. NASA has contacted the Office of Naval Reactors to initiate planning for termination actions on activities covered by the Memorandum of Understanding between NASA and DOE (National Nuclear Security Administration-Naval Reactors) regarding Civilian Space Nuclear Reactors. The bulk of the remaining FY 2005 and projected FY 2006 funds for this activity will be spent on termination costs. NASA will continue a low level of funding for key, high-priority, nuclear system R&T issues, with longer-term plans to increase funding in the future, as the need for long duration lunar and Mars applications approaches.

**Status of Returning the Space Shuttle to Flight**

The first step in pursuing the exploration vision is to return the Space Shuttle safely to flight in order to complete the assembly of the ISS, and then to retire the Shuttle from service by the end of FY 2010. Following the loss of foam insulation from the Space Shuttle's External Tank (ET) during the launch of Discovery (STS-114) in July, we established a "tiger team" to review various manufacturing aspects of the insulation and implications that the foam loss will have for future vehicles. The team reviewed the STS-114 environments, processing steps, and materials. Our engineers have identified several potential causes for the foam loss. Although a single specific cause cannot be isolated, these same engineers have developed fixes to control all potential causes,

and Shuttle workers will likely replace, using more carefully controlled procedures, the areas of insulation on the external tank where foam came loose during the July launch. Plans to inspect and repair the tanks in Michoud are complete, and the repair work has already begun.

The next Shuttle mission, also on Discovery, will be the second test flight in the Return to Flight sequence. While we have not set a specific launch date, we are using the May 3 to 23, 2006, launch window as a target for work to prepare Discovery for the mission. Factors contributing to the decision to target the May launch window include outstanding tank work and the effect on the NASA workforce by Hurricane Katrina. NASA's Michoud Assembly Facility near New Orleans and the Stennis Space Center in Mississippi were in the storm's path, and much of their workforce has been displaced by the storm. Since external tanks are manufactured at Michoud, work there is crucial. Approximately 25 percent of the workforce is back on the job. If improvements to transportation and infrastructure go as planned, the full staff could be back at work in December.

**Status of Katrina Recovery and Repair**

As a result of Hurricane Katrina, significant damage was sustained by NASA's Stennis Space Center (SSC), Mississippi, and Michoud Assembly (MAF), Louisiana. SSC is NASA's premier rocket propulsion testing site. The Center also hosts the NASA Shared Services Center (NSSC) and a number of other Federal agencies on its campus. MAF, near New Orleans, is NASA's manufacturing site for the Space Shuttle program external tanks. NASA estimated that initial Katrina-related response and recovery costs through October, 2005 would be approximately $100 million. NASA has established a Unique Project Number (UPN) within the Space Shuttle budget, to record and track all expenditures. In the September Operating Plan update, NASA identified $100 million in available carryover funds--$15 million within the Shuttle Life Extension Program and $85 million within International Space Station Cargo/Crew Services funding—that has been redirected to the UPN for these immediate Katrina-related costs. On October 28, the Administration forwarded to Congress a FY 2006 emergency reallocation and rescission request that includes a request of $324.8 million to support NASA Hurricane Katrina response and recovery needs through at least May 31, 2006. The requested funds will be used to meet recovery needs at SSC and MAF including: repair and replacement of real property, Space Shuttle external tanks and external tank support equipment, and communications and IT infrastructure; environmental remediation; emergency operations (diesel fuel for power generators, debris removal, etc.); and, satellite and aircraft imagery for evaluation of hurricane damage.

**International Space Station (ISS) Status and Plans**

Earlier this year, we established a team known as the Shuttle/Station Configuration Options Team (SSCOT) to evaluate options for the assembly and utilization of the ISS, taking into account the plan to retire the Space Shuttle by 2010 while honoring US commitments to the Space Station International Partners. The Team also considered that Space Shuttle flight rate planning must account for the limitations of the Shuttle that became apparent after the loss of Columbia, namely that NASA's ability to successfully conduct 28 Shuttle flights by 2010 was no longer technically feasible.

The results of the study have been reviewed by the Space Operations Mission Directorate and other NASA offices, and we have initiated discussions with the ISS International Partners.

- Key Elements of NASA's Plan for Space Station:
  NASA's proposed plan, subject to the normal budget and appropriation process, as well as ongoing return-to-flight considerations, is to fly the Shuttle in a disciplined, measured fashion, and to retire it by the end of FY 2010. The flights to the ISS would be ordered to provide the necessary infrastructure for the International Partner modules first, followed immediately by the Partner laboratories. Maintenance and logistic flights for sustainability are at the end of the sequence. The order and flight strategy is as important a consideration as the specific number of flights.

  The plan includes the launch of key NASA-provided infrastructure elements and other capabilities to enable a potential six person crew and meaningful utilization of the ISS. NASA has determined, however, that its exploration research objectives no longer require the Centrifuge Accommodation Module that is being developed for NASA by JAXA under a barter arrangement.

  This proposed approach would accommodate almost all of the International Partner elements currently planned for launch to the ISS, with the notable exception of the Russian Solar Power Module. NASA is prepared to immediately engage in detailed bilateral discussions to establish mutually beneficial arrangements to accommodate the proposed change.

NASA senior officials have been meeting with our key International Partners to discuss this approach, and the Partners have agreed to conduct a series of multilateral discussions to receive and assess the full details of NASA's proposed plan and the Partners' priorities in preparation for an anticipated Space Station Heads of Agency meeting in the January 2006 timeframe.

Recently, the Multilateral Coordination Board (MCB) convened to discuss the proposed configuration and assembly sequence and tasked the Space Station Control Board (SSCB) to assess the technical aspects of this new approach. The MCB is the senior ISS management forum responsible for oversight of all ISS development, operations and utilization activities, with high-level representation from NASA, Russia, Europe, Japan and Canada. Following these detailed discussions, the partnership will be ready to meet at the Heads of Agency level.

**Aeronautics Research**

Dr. Lisa Porter was recently selected as Associate Administrator to lead NASA's Aeronautics Research Mission Directorate. In that role she has begun the process of reshaping NASA's Aeronautics research program allowing the Agency to take responsibility for the intellectual stewardship of the core competencies of Aeronautics for the Nation. This will require us to reinvest in the Agency's in-house expertise to ensure that we retain the world-class skills, knowledge, and facilities needed to guarantee our Nation's ability to consistently contribute world-class innovation to aeronautical challenges, both civilian and military.

The reshaped aeronautics program will strengthen our partnerships with the Department of Defense (DoD) and Federal Aviation Administration (FAA), capitalizing on each agency's unique capabilities and resources to strengthen the Nation's leadership in aeronautics. Our partnership with DoD will include close collaboration to establish an integrated national strategy for management of the Nation's most vital wind tunnels. As a result, NASA and DoD will work cooperatively to consider the impact of any decisions regarding the management of each agency's respective wind tunnel facilities. We will forge new partnerships and continue to benefit from

partnerships built in the past with academia and industry. Industry will be able to rely on us to invest in the "seed corn" that is the critical ingredient in revolutionary technological advancement.

As a first step, NASA is reshaping the three major programs within the Aeronautics Mission Directorate. The previous Vehicle Systems Program is being renamed the Fundamental Aeronautics Program in order to reflect properly its new focus on fundamental aeronautical sciences. Within Fundamental Aeronautics, and consistent with direction we received from the Congress, we will re-establish the Agency's dedication to the mastery of core competencies in subsonic, supersonic, and hypersonic flight. We will create projects that provide continual, long-term investment in the fundamentals and that build upon that investment to develop system-level, multidisciplinary capabilities that will enable both the civilian and military communities to build platforms that meet their specific needs. As part of our investment in fundamental aeronautics, we are positioning the program to continue important long-term research activity in FY 2006 that preserves the core competencies in rotorcraft and hypersonics, drawing upon NASA's critical in-house expertise. We are transforming the Aviation Safety and Security Program into the Aviation Safety Program, where we will focus research on safety areas that are appropriate to NASA's unique capabilities. Projects in Aviation Safety will address integrated vehicle health management, resilient aircraft control, intelligent flight deck technologies, and aging aircraft. The Airspace Systems Program is being realigned to directly address the air traffic management needs of the Next Generation Air Transportation System (NGATS) as defined by the Joint Planning and Development Office (JPDO), pursuant to Public Law 108-76.

Leading scientists and engineers from the NASA field centers participated in workshops in September and October to lay the foundation for a technical plan to reshape the Aeronautics Research program. As the year progresses, this technical plan will be guided by the National Aeronautics Policy that is being developed by Office of Science and Technology Policy and NASA in collaboration with other agency partners. (Dr. Porter is co-chair of the National Science and Technology Council's Aeronautics Science and Technology Subcommittee.) In addition, the National Research Council is currently conducting a decadal survey for aeronautics, which will also provide inputs to our plan.

**Maintaining a Robust Science Portfolio**

As NASA moves forward to implement the Vision for Space Exploration, science will remain a major element of NASA's overall portfolio. During the past year, the science program has yielded many exciting results. The Cassini spacecraft has had close encounters with a number of Saturn's diverse moons and returned many exciting results, including images of the mysteriously sponge-like cratered moon Hyperion. Coordinated observations of celestial gamma ray bursts by four NASA spacecraft and ground-based observatories showed that these brief bursts of radiation, among the most powerful explosions known, are emitted when a black hole swallows a neutron star. Solar physicists used data from European and NASA space observatories to improve our understanding of the role of electric currents in solar flares, which can disable satellites and will pose a threat to future astronauts. The Deep Impact spacecraft successfully collided with Comet Tempel 1 causing a massive explosion on the comet's surface. The debris released by the force of this impact will be used by scientists to study the formation of the solar system and the structure and composition of comets. The Mars Reconnaissance Orbiter was successfully launched and is on its way toward a March 2006 arrival. On a more urgent note, NASA teamed with other federal agencies and used its aircraft and satellite remote sensing systems to track Hurricane Katrina's winds and then to evaluate the damage and flooding caused by the storm. The Hubble Space Telescope was used to search for oxygen-rich minerals on the Moon that might be useful for long

term human presence there. Our science program will continue to be a major emphasis of the Agency, and we look forward to comparable future results from the science portfolio.

To continue this agenda of discovery, the science budget outlook promises a healthy and vigorous program. The FY 2006 President's budget showed a slight decrease of less than one percent in the budget for NASA's Science Mission Directorate, relative to the FY 2005 budget, but this was attributable to adjustments to support reducing the Federal deficit and other National priorities. NASA's science budget was not cut to serve the needs of the human exploration program.

Within the science program, NASA seeks to maintain a robust portfolio of investment over time across the several disciplines in the Earth and space sciences. Beginning with the baseline of existing programs and recent strategic planning, we set future directions by factoring in recent scientific progress, Presidential initiatives, and science community advice. Beyond these broad considerations, choices between programs in a discipline can be driven by technology readiness and partnership opportunities that can leverage NASA's investment.

As we continue to expand the frontier of scientific knowledge of the universe, however, we recognize that NASA cannot afford to take advantage of all deserving opportunities. In making choices within these constraints, we recognize the need to change the emphasis of the science portfolio. For example, it had been planned to allocate, in FY 2006, a very substantial increase in funding to robotic Mars exploration in future years. We have revisited these plans, and are adjusting our portfolio to increase emphasis on Earth and solar science as an important component of the science program. The value of Earth science and applications from space has been highlighted during the recent hurricanes and their aftermath. Some of the reallocated resources are also targeted for urgent needs in the NASA astronomy program. These budget adjustments are internal to the science program and will not affect NASA's proposed spending on exploration or aeronautics.

In defining and executing specific science program activities, the prime consideration remains excellence. NASA will continue to look to the National Academies for advice on scientific priorities, using, for example, discipline decadal surveys. These are now available in all of the areas of space science and a corresponding major Academy study is currently underway for Earth science. We expect the latter to be completed in fall of 2006. NASA will also continue the practice of selecting investigations via merit-based peer review of competitive proposals received in response to open solicitations, and investigators at the NASA Centers will continue to be able to compete against other investigators for support for their own research programs.

Looking beyond the science program itself, we believe that the Science Mission Directorate will play an important role in implementing the Vision. This exploration program is not premised on or justified exclusively by science, but we expect enhanced opportunities for scientific investigation to be a significant aspect of it. As a result, we are working to establish the right interfaces and linkages between program planning in the Science Mission Directorate and the Exploration Systems Mission Directorate.

**NASA Workforce**

Although the overall NASA budget has increased in recent years, the NASA workforce has been impacted by significant budget reductions in our aeronautics programs, cancellation of programs, and investment changes to the research and technology portfolio of the Exploration Systems Mission Directorate. We have taken specific actions to try to alleviate this problem. For example,

starting in November 2004, NASA implemented employee buyouts to rebalance the workforce and in January 2005 established hiring guidelines to emphasize filling vacancies from within the Agency. We are also making significant changes that will help ensure that NASA's Centers have a productive future. Contractors will continue to play a key role, but we need to ensure that the federal government maintains the in-house intellectual core capacity to sustain NASA's exploration, science and aeronautics missions. Our goal is to ensure that NASA Centers are productive contributors to the Agency's agenda and that we have the people and tools necessary to accomplish the long-term goals of space exploration. With that in mind, we will be making changes at Headquarters as well.

In September, NASA initiated an Institutional Requirements Review (IRR) the scope of which includes corporate G&A, corporate service pools, and all Headquarters-based operations. Our goals are to keep corporately funded requirements within overall corporate budget guidelines, reduce the total workforce at Headquarters commensurate with its appropriate role and overall size of the Agency, and consolidate required personnel at the Headquarters building. We aim to (1) gain operational efficiencies; (2) align ourselves to a management model that has Headquarters in charge of architecture, strategy, policy, compliance, and general management with field Centers executing programs and projects; and (3) set an example for the rest of the Agency of the willingness of Headquarters to make hard decisions that benefit NASA in the long run**.**

Assuming we can achieve additional buyouts in the next few months, NASA has approximately 950 civil servants in the field that are not currently assigned to NASA programs in FY 2006. We will continue to address this problem and structure the workforce to ensure the success of the exploration vision, as well as NASA's other missions in science, aeronautics, education, space operations and exploration. However, changes to our skill mix and, therefore, the workforce will be required.

The NASA Office of Human Capital continues to work with center management on the workforce strategies. We will continue to identify center work assignments based on our strategic planning for the exploration systems. We are in the planning stages of offering a final buyout program to employees.

If we are unable to cover all of the NASA civil service positions, NASA is planning to conduct a Reduction in Force (RIF). Our Office of Human Capital is working with human resource offices at the centers to ensure readiness for a RIF, should it become necessary. However, a RIF is a last resort, and we will exhaust all other reasonable possibilities before undertaking such an action.

With changes to NASA's mission it is important that we manage our workforce issues to ensure that we have the right skill mix to successfully execute the vision for space exploration and maintain the important work in other areas such as our aeronautics, space operations and science portfolios. We will have an integrated, Agency-wide approach to human capital management.

**NASA Authorization Bill for 2005**

The House and Senate have passed two differing versions of the National Aeronautics and Space Administration Authorization Act of 2005 (H.R. 3070 and S. 1281), and we understand that conferees may meet soon to resolve the differences between the two versions. We will soon be sending the Committee a letter outlining NASA's views with respect to the bills for Members' consideration during this conference.

NASA applauds both bills' endorsement of the Vision for Space Exploration, and the incorporation of a number of the legislative provisions the Administration included in the proposed NASA authorization bill submitted to Congress. Both bills provide many of the policies and tools necessary to achieve the fundamental goal of the Vision, i.e., the advancement of U.S. scientific, security, and economic interests through a robust space exploration program. While we find much to support in both bills, we continue to have serious concerns regarding several provisions in each bill that need to be satisfactorily addressed prior to final enactment of reauthorization legislation, and look forward to working with the Committee to resolve these issues.

**Conclusion**

In the months ahead, I am confident that we will achieve steady progress in reaching our exploration objectives—one mission, one voyage, and one landing at a time. I am convinced that in the ways we are attacking the challenges presented by the Vision for Space Exploration, we are setting the stage for a space program that will increase our opportunities to advance scientific knowledge and expand our horizons.

Once again, thank you for the opportunity to testify today. Mr. Chairman, and Members of the Committee, I would be pleased to respond to any questions.